WHAT IS CLAIMED IS:

1. An objective lens driving apparatus comprising:

an objective lens;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for receiving a detection signal from the focus detection means and outputting an arithmetic operation result of this detection signal to the focusing coil;

tracking control means for receiving a detection signal from the tracking detection means and outputting an arithmetic operation result of this detection signal

to the tracking coil; and

compensation means for receiving at least one of output signals from the focus control means and the tracking control means, and adding an arithmetic operation result of the received signal to an output signal from the tracking control means to the tracking coil or to an output signal from the focus control means to the focusing coil.

2. An objective lens driving apparatus according to claim 1, wherein the compensation means arithmetically processes the output signal from the tracking control means and adds the arithmetic operation result to the output signal from the focus control means to the focusing coil.

3. An objective lens driving apparatus according to claim 1, wherein the compensation means arithmetically processes the output signal from the focus control means and adds the arithmetic operation result to the output signal from the tracking control means to the tracking coil.

4. An objective lens driving apparatus according to claim 1, wherein the compensation means arithmetically processes the output signal from the tracking control means and adds the arithmetic operation result to the output signal from the focus control means to the focusing coil, and the compensation means arithmetically processes the output

signal from the focus control means and adds the arithmetic operation result to the output signal from the tracking control means to the tracking coil.

5. An objective lens driving apparatus according to claim 1, wherein the compensation means performs arithmetic operations to provide such frequency characteristics as to pass a frequency component near a control band determined by the tracking control means and the focus control means.

6. An objective lens driving apparatus according to claim 1, further comprising compensation means for compensating reversion of polarity, when the polarity of a signal detected by the tracking detection means is reversed while the objective lens is being tracked to a desired position.

7. An objective lens driving apparatus comprising:

an objective lens;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical

axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for receiving a detection signal from the focus detection means and outputting an arithmetic operation result of this detection signal to the focusing coil;

tracking control means for receiving a detection signal from the tracking detection means and outputting an arithmetic operation result of this detection signal to the tracking coil; and

compensation means for receiving at least one of detection signals from the focus detection means and the tracking detection means, and adding an arithmetic operation result of the received detection signal to a tracking error detection signal from the tracking detection means to the tracking control means or to a focus error detection signal from the focus detection means to the focus control means.

8. An objective lens driving apparatus according to claim 7, wherein the compensation means arithmetically processes the tracking error detection signal from the tracking detection means and adds the

arithmetic operation result to the focus error detection signal from the focus detection means.

9. An objective lens driving apparatus according to claim 7, wherein the compensation means arithmetically processes the focus error detection signal from the focus detection means and adds the arithmetic operation result to the tracking error detection signal from the tracking detection means.

10. An objective lens driving apparatus according to claim 7, wherein the compensation means arithmetically processes the tracking error detection signal from the tracking detection means and adds the arithmetic operation result to the focus error detection signal from the focus detection means, and the compensation means arithmetically processes the focus error detection signal from the focus detection means and adds the arithmetic operation result to the tracking error detection signal from the tracking detection means.

11. An objective lens driving apparatus according to claim 7, wherein the compensation means performs arithmetic operations to provide such frequency characteristics as to pass a frequency component near a control band determined by the tracking control means and the focus control means.

12. An objective lens driving apparatus according to claim 7, further comprising compensation means for

compensating reversion of polarity, when the polarity of a signal detected by the tracking detection means is reversed while the objective lens is being tracked to a desired position.

13. An optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

control means for arithmetically processing at least one of detection signals from the focus detection means and the tracking detection means and outputting a control signal to each of the focusing coil and the

tracking coil; and

determination means for temporarily restricting functions of the control means when the determination means has determined that a disturbance component is mixed in the detection signal.

14. An optical disk apparatus according to claim 13, wherein the control means comprises:

focus control means for receiving a detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for receiving a detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil; and

compensation means for receiving an output signal from one of the focus control means and the tracking control means, and arithmetically processing the received output signal.

15. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the tracking control signal from the tracking control means and adds the arithmetic operation result to the focus control signal.

16. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the focus control signal from the focus control means and adds the arithmetic operation result to the tracking control signal.

17. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the tracking control signal from the tracking control means and adds the arithmetic operation result to the focus control signal, and the compensation means arithmetically processes the focus control signal from the focus control means and adds the arithmetic operation result to the tracking control signal.

18. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the detection signal from the tracking detection means and adds the arithmetic operation result to the focus control signal.

19. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the detection signal from the focus detection means and adds the arithmetic operation result to the tracking control signal.

20. An optical disk apparatus according to claim 14, wherein the compensation means arithmetically processes the detection signal from the tracking detection means and adds the arithmetic operation result to the focus control signal, and the compensation means arithmetically processes the detection signal from the focus detection means and adds the arithmetic operation result to the tracking control signal.

21. An optical disk apparatus according to claim 14, wherein the compensation means performs arithmetic operations to provide such frequency characteristics as to pass a frequency component near a control band determined by the focus control means and the tracking control means.

22. An optical disk apparatus according to claim 14, further comprising change-over switch means for switching an arithmetic processing method in the compensation means in accordance with a tracking control state.

23. An optical disk apparatus according to claim 22, wherein the change-over switch means corrects reversion of polarity, when the polarity of a detection signal detected by the tracking detection means is reversed while the objective lens is being tracked to a desired position.

24. An optical disk apparatus according to claim 13, wherein the determination means determines a header signal and a jump signal to be disturbance components.

25. An optical disk apparatus according to claim 14, wherein the determination means temporarily restricts functions of the compensation means when the determination means has determined that a disturbance component is mixed in the detection signal obtained by the tracking detection means.

26. An optical disk apparatus according to claim 14, wherein the determination means temporarily restricts functions of the compensation means when the determination means has determined a tracking control error on the basis of a disturbance component mixed in the detection signal obtained by the tracking detection means.

27. An optical disk apparatus according to claim 13, wherein the control means comprises:

focus control means for arithmetically processing the detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for arithmetically processing the detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil; and

compensation means for receiving at least one of the detection signals from the focus detection means and the tracking detection means, and adding an arithmetic operation result of the received detection signal to a tracking error detection signal from the tracking detection means to the tracking control means or to a focus error detection signal from the focus detection means to the focus control means.

28. An optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk having information

recordable/reproducible land tracks and groove tracks;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

control means for arithmetically processing at least one of detection signals from the focus detection means and the tracking detection means and outputting a control signal to each of the focusing coil and the tracking coil;

disturbance generating means for generating a disturbance component of a predetermined frequency and adding the disturbance component to the detection signal; and

phase difference detection means for detecting a

phase difference between a phase of a response signal corresponding to the detection signal, to which the disturbance component has been added, and a phase of the added disturbance component, in each of cases where the land tracks are being subjected to a tracking control and the groove tracks are being subjected to the tracking control.

29. An optical disk apparatus according to claim 28, wherein the phase difference detection means sets parameters for arithmetic operations in the control means such that a difference value between the phase difference in the case where the land tracks are being subjected to the tracking control and the phase difference in the case where the groove tracks are being subjected to the tracking control may become a predetermined value or less.

30. An optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens

holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for arithmetically processing a detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for arithmetically processing a detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil;

compensation means for arithmetically processing the tracking control signal from the tracking control means on the basis of a predetermined compensation coefficient, and adding the arithmetic operation result to the focus control signal;

disturbance generating means for generating a disturbance component of a predetermined frequency and adding the disturbance component to the detection signal obtained by the tracking detection means;

gain comparison means for comparing an amplitude of the output signal from the tracking detection means and an amplitude of the disturbance component generated

by the disturbance generating means; and

adjustment means for adjusting the compensation coefficient for the arithmetic operation in the compensation means in accordance with a comparison result of the gain comparison means.

31. An optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for arithmetically processing a detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for arithmetically processing a detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil;

compensation means for arithmetically processing the tracking control signal from the tracking control means on the basis of a predetermined compensation coefficient, and adding the arithmetic operation result to the focus control signal;

disturbance generating means for generating a disturbance component of a predetermined frequency and adding the disturbance component to the detection signal obtained by the tracking detection means;

phase comparison means for comparing a phase of the output signal from the tracking detection means and a phase of the disturbance component generated by the disturbance generating means; and

adjustment means for adjusting the compensation coefficient for the arithmetic operation in the compensation means in accordance with a comparison result of the phase comparison means.

32. An adjustment method for an optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk having information recordable/reproducible land tracks and groove tracks;

an objective lens holder for holding the objective

lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction; and

control means for arithmetically processing at least one of detection signals from the focus detection means and the tracking detection means and outputting a control signal to each of the focusing coil and the tracking coil,

the method comprising:

generating a disturbance component of a predetermined frequency;

adding the disturbance component to the detection signal;

detecting a phase difference between a phase of a

response signal corresponding to the detection signal, to which the disturbance component has been added, and a phase of the added disturbance component, in each of cases where the land tracks are being subjected to a tracking control and the groove tracks are being subjected to the tracking control; and

setting parameters for arithmetic operations in the control means such that a difference value between the phase difference in the case where the land tracks are being subjected to the tracking control and the phase difference in the case where the groove tracks are being subjected to the tracking control may become a predetermined value or less.

33. An adjustment method for an optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for arithmetically processing a detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for arithmetically processing a detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil; and

compensation means for arithmetically processing the tracking control signal from the tracking control means on the basis of a predetermined compensation coefficient, and adding the arithmetic operation result to the focus control signal,

the method comprising:

generating a disturbance component of a predetermined frequency;

adding the disturbance component to the detection signal obtained by the tracking detection means;

comparing an amplitude of the output signal from the tracking detection means and an amplitude of the disturbance component generated by the disturbance generating means; and

adjusting the compensation coefficient for the arithmetic operation in the compensation means in accordance with the comparison result.

34. An adjustment method for an optical disk apparatus comprising:

an objective lens for converging a light beam onto an optical disk;

an objective lens holder for holding the objective lens, the objective lens holder being supported to be movable in an optical axis direction of a light beam made incident on the objective lens and a direction perpendicular to the optical axis direction;

a focusing coil for driving the objective lens holder in the optical axis direction;

a tracking coil for driving the objective lens holder in the direction perpendicular to the optical axis direction;

focus detection means for detecting a positioning error of the objective lens holder in the optical axis direction;

tracking detection means for detecting a positioning error of the objective lens holder in the direction perpendicular to the optical axis direction;

focus control means for arithmetically processing a detection signal from the focus detection means and outputting a focus control signal to the focusing coil;

tracking control means for arithmetically

processing a detection signal from the tracking detection means and outputting a tracking control signal to the tracking coil; and

compensation means for arithmetically processing the tracking control signal from the tracking control means on the basis of a predetermined compensation coefficient, and adding the arithmetic operation result to the focus control signal,

the method comprising:

generating a disturbance component of a predetermined frequency;

adding the disturbance component to the detection signal obtained by the tracking detection means;

comparing a phase of the output signal from the tracking detection means and a phase of the disturbance component generated by the disturbance generating means; and

adjusting the compensation coefficient for the arithmetic operation in the compensation means in accordance with the comparison result.